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Towards an overarching regulation of electronic communications

The world is in the midst of what many call the second digital revolution, led by new and exciting trends such as big data, cloud computing, and the ‘Internet of Things’. Digital technologies are transforming our cities, our businesses, our social lives and our nation – and they are key to an innovative, diversified and robust economy with high standards of living for people.

As we rely on increasingly sophisticated systems and advanced telecommunications networks, the challenge is to refine appropriate policies and support laws that allow societies to seize the opportunities that new digital technologies offer. While the evolution of telecommunications networks has enabled a complete shift in market dynamics, opening each country to international exposure, this new era requires new business models and creates challenges.

The role of the regulatory authorities is to support and enable this dramatic change.

The impact of new technologies

The standard telecommunications regulation framework was developed when telephones still had cords and televisions had antennas. The main challenges lay in opening a monopolistic sector to competition and promoting new infrastructure. Therefore, for the last 30 years, regulation has focused on providing incentives for the rollout of competitive telecom network infrastructure and regulating access to infrastructure for better and cheaper services for consumers. In this 21st century, technology has driven telecommunications into households, with wireless phones and access to the internet. In 2014, global internet traffic was 16,144 GBps and it is expected to grow to 51,794 GBps in 2019.¹ With this evolution of technologies and especially the development of full internet provider (‘IP’) fixed and mobile networks, regulation needs to go beyond the physical layer of the network and enter the digital world.

Today, communications and services are delivered through numerous routes and platforms, which are outside of traditional telecom operators. For example, users of WeChat can create a group of contacts and, in some countries, select a restaurant, make a reservation, select the best route to reach a given location, pay for dinner, share photographs or videos, and leave a review. Teachers are creating groups for each of their classes, connecting pupils together, following up and correcting assignments, etc. All this is achieved seamlessly online through a single application. The creation of the groups, their size, the density of communication inside the group is unbeknown to the telecom operators and yet the members of these groups are the operators’ subscribers. The traditional model is broken. In the old model, all communications between operators’ subscribers were managed, controlled and the service was billed to the operators’ own clients. In today’s model, infrastructure and services are more and more separated. New intermediaries capture the value created by services: the digital platforms, the so-called ‘Over the Top’ (‘OTT’).

Businesses are also directly impacted by these evolving technologies. For some time already, large corporations have had to use communication services enabling them to expand beyond each nation’s borders. These same services should be available worldwide. To do this, businesses need to develop integrated information systems or purchase worldwide communication services which connect their branches anywhere in the country or in the world, organise private video conferencing between subsidiaries, store data in a single location (with backup in another safe location), to begin with.

Similarly, smart cities will integrate communication and information technology solutions to transform the way our cities are organised and managed.

More broadly, the ‘Internet of Things’ (‘IoT’) is becoming a reality. All devices will

be connected, and flows of data will be stored and managed to provide services that are yet to be invented.

Customer trends and behaviours have also evolved significantly and erased frontiers between interpersonal communication and dissemination of information by broadcasting and creating new markets and intermediaries. The rules of the game and value chains – the activities through which companies add value at every step of their processes – have changed. Social media is more than a communication tool; it is a means to trade, broadcast, exchange, transfer, or even do business.

Most importantly, new intermediaries have popped up between consumers, content providers, telecom operators (telcos) and platforms. Diverse and innovative content and services are now just a click away. In the beginning, consumers and telcos alike welcomed this change. With time, however, new issues have arisen: such as integrated online payment, personal data protection, power concentrated by a few global internet players, and piracy.

While yesterday's telco controlled the value chain, from content to handset, today's electronic communications are driven by digital platforms and applications, sparking a major power shift. This shift has pushed telcos and digital platforms into a symbiotic relationship. To provide services and content to customers, platforms and applications must access the telcos' local loop. Yet telcos are selling data plans that are more comprehensive, making it easier and cheaper for customers to access digital platforms' services and content. This relationship is uneven: platforms are global and agile players, while telcos are bound by authorisations (licences) granted by national governments, and subject to a comprehensive set of ex ante regulatory obligations. In this new environment, telcos could merely become providers of volume-based data (broadband) plans to customers with limited added value to the service, while digital platforms may be prevented from offering content and services to customers.²

Although the regulatory framework has moved forward to embrace these changes, the paradigm shift caused by these new technologies and new behaviours has changed too much to adapt to this digital transformation. Thirty-year-old rules and practices no longer meet the needs of the new realities, and regulatory practices can

no longer be confined to telecom networks and services.

Regulation must adapt to this new reality and look to the future.³

A call for a renewed approach to regulation

The traditional regulatory approach relies mainly on the assessment of telecom service providers' capacity to control the physical access to their infrastructure (wholesale level), and the assumption that this control results automatically in market power at the retail level – and can justify regulatory intervention ('ex ante remedies') requiring the dominant service provider to fulfil specific obligations to prevent – the logic of ex ante - potential abuses⁴ (eg, non-discrimination, cost orientation, etc.). This ex ante regulatory intervention enables the progressive development of a competitive environment. Assessing market power, however, has become more and more fundamentally flawed. Such approach does not take into consideration the new reality of multi-sided markets where, for instance, customers are not paying for the service or content provided to them and service providers' revenues flow from advertisements or bundling, where communication services are part of a much larger array of services. Regulation must, consequently, adopt a wider approach that considers convergence of technologies and access ubiquity, and assesses whether economic bottlenecks result from multi-sided markets or bundle of services that underpin the dynamics of digital platforms (or OTT service providers).

The Communications Regulatory Authority ('CRA') must address regulation differently. As expressed by a number of researchers and specialists⁵ regulation should contribute to maximising the benefits of networks. For instance, the more value a communication network has, the more value it provides for an individual and the more people this individual can communicate with using this network. Economists qualify these benefits as 'positive network externalities' (the more a network is used, the more value this network has for its members and the more benefit each member gets out of the network). These 'positive network externalities' mitigate against 'club effects', where a service provider creates artificial barriers for people to communicate or access services outside of the network. Regulators should instead favour open networks, which include favoring an

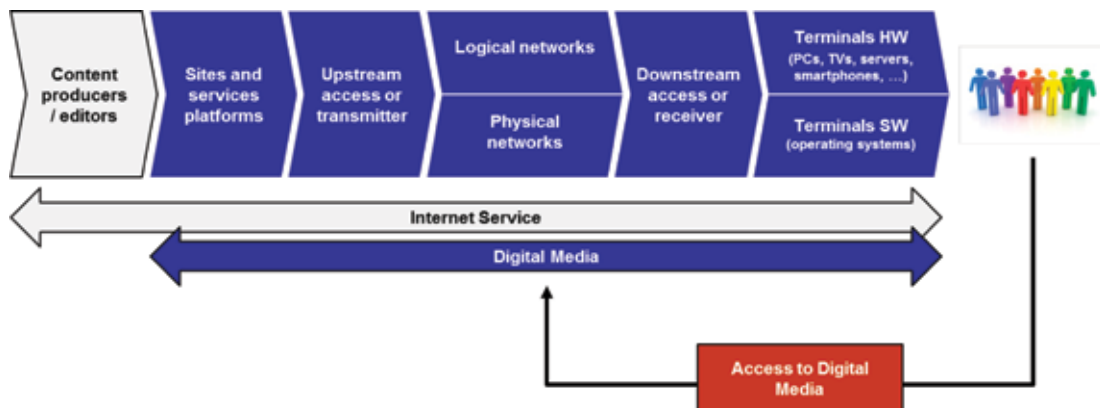
‘open’ internet - uninhibited access to legal online services and content.⁶ This also implies that regulators must extend their activities to digital platforms to avoid economic bottlenecks that allow one or a few players to manipulate network externalities and capture the networks’ full benefits.

With hindsight, most of the behaviours currently at stake relate to the digital platforms’ ability to internalise to their advantage the positive network externalities, and, in doing so, increase their market power to a point where they become virtually impregnable for a given type of Internet service.⁷ In the meantime, tight oligopolies will become the de facto market structure for telcos due to their large fixed network costs, in a never-ending cycle of network investments.⁸

Today’s regulatory perspective needs to consider the end-user from the beginning of his/her journey to the end, when he/she accesses his/her desired content or service. Accordingly, regulation should address the digital means by which a given content or service is delivered to the end-user. This approach leads to define infrastructure and services using any communication network, including the internet, as the ‘digital media’ that allows end-users (individuals, firms, public institutions) or connected objects to access the service (or content). In other words, this definition goes beyond traditional digital broadcasters, to encompass all technical means (physical or logical) involved in providing an ‘internet service’ as illustrated below.

Figure 1 – The scope of regulation: the digital media value chain (Tera Consultants)

Therefore, the regulatory approach needs to:



- aim at preserving the long-term interest of end-users;
- be dynamic and reactive;
- focus on behaviours more than on dominant players;
- favour an end-to-end approach, considering both the physical and logical network, service platforms, devices, software, algorithms and applications;
- ensure that the quality offered to the end-user corresponds to the requested service, both in terms of speed, latency, but also in terms of scope, incorporating more or less intelligent services (storage, cloud virtual private network);
- ensure the security of services to preserve the integrity of communications and personal data; and
- promote the ubiquity of access and the full migration of personal data between the platforms.

Consequently, a responsive and non-intrusive approach to regulation may combine:

- controlling or assessing behaviors, contractual agreements, and tariffs (‘ex post’ intervention); and
- imposing ex ante remedies on powerful actors in predefined relevant markets (‘ex ante’ regulation).

This control shall focus on wholesale products, but also include pricing practices in retail markets such as ‘bundling’ (associating various services which cannot be purchased independently of one another), ‘zero-rating’ (tariff practice where the service provider does not charge end-users to use certain applications or services when a customer subscribes to another service) or ‘sponsored data’ (selling data packages at low prices or for free subject to the subscription of a bundle of service).

In this context, the regulator aims to

deal with any competitive bottleneck. The market power of an actor could be measured primarily by the share of traffic that is sent or controlled at any level of the digital media value chain (including all the means necessary to access the end-user desired service or content). This means addressing competitive bottlenecks through imposing on whatever player, whether a telecom service provider, a transit service provider, or a digital platform, etc, preventive, corrective and/or protective measures for end-users. The regulator could also consider any contractual agreement to favour any powerful player in the access to the digital media value chain. For instance, ‘zero rating’ agreements could be assessed, as well as agreements between telecom service providers and digital content distributors. Conversely, the portability of IP addresses or of profiles and personal data between applications could also fall under the responsibility of the regulator in the same manner as the current portability of phone numbers. Indeed, the regulator could coordinate with the various relevant authorities, when required, and each country can develop a consistent governance approach.

Regulation and governance will go beyond a national approach and incorporate a transnational dimension. Global players offering digital media services to users distribute them across countries and continents. In practice, a more or less restrictive regional coordination may be required to tackle issues such as net neutrality, security of data in the IoT or data protection, as was the case with international roaming tariffs.

In addition, a geographically fragmented regulation may prevent each country from reaping the benefits of the digital economy. As a minimum, national regulators must identify the areas and the issues that need to be addressed on a regional level to avoid additional costs for service providers due to regulatory heterogeneity between the countries - the discrepancies between national regulations would generate additional development costs and limit economies of scale for new services. Regional governance would also ensure greater transparency and better predictability in the laying down the rules for all market players.⁹

Putting the regulatory approach into action

To ensure that end-users take full advantage of communications and access the most advanced and innovative services, ranging from IoT, IoE, Smart cities, Smart cars, e-Health, or e-Education, among others, access to services and content needs to be seamless, instantaneous and ubiquitous. To achieve these objectives:

End users can access the services and content of their choice, under conditions providing efficient access

Allowing service providers to organise restrictions on the types of service means service providers can exercise their clout by creating access bottlenecks to other providers willing to offer services or content to their subscribers. More broadly, telecommunications service providers should not be able to choose or exclude digital media suppliers at the consumer’s expense.

To ensure a fair, non-discriminatory and effective access to digital media to all end-users (individuals, firms, public institutions), the regulator must develop a net neutrality regulation to be rigorously implemented by telecommunications service providers for each class of traffic (eg, communication, messaging or video services). Accordingly, discrimination is not possible within a given class of traffic and a service provider cannot be able to offer a hierarchical priority access within a class of services, let alone throttling or blocking any content and service platform provider’s traffic.

As a matter of consequence, the regulator can measure the quality of service (‘QoS’), as often as possible, including the type of content, the source and destination, and collect all information from telecommunications service providers pertaining to traffic management. To this end, regulatory authorities shall review their QoS framework. Further, regulatory authorities should control traffic discrimination and monitor, for instance, fast-lane agreements between telecommunications service providers and OTTs. More broadly, regulatory authorities should assess the impact on competition of agreements between telcos and digital platforms.

In addition, regulation can facilitate the evolution of business models. For instance,

a typical strategy for a service or content provider is to offer an increasingly wider array of services to customers, in an attempt to keep them within their platform. Introducing a simple and secure means of payment for these services and content becomes paramount. WeChat is once again an interesting example, as the service allows subscribers to pay directly through the WeChat application wherever they are.

These new models are also establishing authentication, end-to-end cryptography, personal data and 'profile' portability as major matters to address.

This regulation could promote service and content diversity, promote competition between telecom service providers and digital platforms and ensure innovation for the consumers.

However, to be efficient, this regulation needs to be coordinated with other countries through new regional governance models and under the auspices of international governance bodies.

Each country needs to be strongly and securely connected to the world

Requirements in terms of international connectivity will continue to increase significantly in the future. Today's requirements only represent a small amount of what would be required to sustain the growth and diversification of the economy. Quality of service will have to improve significantly, especially in terms of latency and stability of the services provided. For instance, effective autonomous cars or e-health services cannot be contemplated everywhere as long as broadband services do not fulfil high quality and very low latency standards. The same applies to e-education, where immediate interaction between several locations will be paramount. More broadly, customers' expectations will increase steadily as services diversify.

Network integrity and security of communications, including international connectivity, will be paramount to develop trust in the new communication services.

Thus, the regulator can support initiatives enabling services or content to be located as close to users as possible. This could for instance, include fostering the development of independent data centre capabilities open to all service providers and end-users. In any case, localising services and content would increase QoS by nature - the less distance and the fewer intermediaries required to access

the service or content of the consumer's choice, the less access will be prone to disruption. This would also have a direct impact on latency, and hopefully security.

Regulation can favour future investments while preserving choice of service providers for end-users

The overall telecom sector remains healthy. Given the communication industry's fast innovation cycles, the regulator can develop incentives to favour continuous investments in local access.

To this end, two sets of measures can be envisaged: (1) ensure that charges at the wholesale level include a premium to favour investment in infrastructure rather than access to existing networks; and (2) support local service providers in their negotiations with digital platform or transit service providers to ensure fair and non-discriminatory peering agreements.

These measures could also contribute to efficient wholesale offers, providing better economies of scale for service providers, for instance, through appropriate leased lines and Bitstream/VULA offers.

New services also require huge IT developments, whether in offering efficient and simple invoicing solutions, including third party solutions, developing new customer relationship management ('CRM') solutions, or in creating interfaces and interoperability between the various platforms and/or services and/or devices. Innovative data 'hubs' to make 'big data' even more efficient should be also considered in conjunction with enhanced security of personal data and network integrity.

Regulation can contribute to building trust on services to ensure take off/end-user adhesion to a smart nation

Without trust, services cannot themselves develop. Trust in the service to be delivered according to agreed standards, trust in the delivery of goods, trust in the protection of personal data, etc. Trust must underpin all exchanges and communication. Data protection, privacy and business secret concerns need to be addressed at all levels. Payment solutions need to be more secure and cryptography more reliable.

Once again, proper and effective governance models can be developed in coordination with other countries at least

through regional governance bodies.

Conclusion

Regulation can evolve to provide value to consumers and protect the long-term interests of end-users. To this end, regulators can consult and work with all stakeholders – including service providers and end-users – to address gaps in regulation and stakeholder concerns. We look forward to a productive collaboration.

Notes

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- 1 http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/VNI_Hyperconnectivity_WP.html.
- 2 Some digital platforms, such as Google, are very active in overcoming this bottleneck through the development of their own access network, at least in part of the world. Google has even started offering fixed telecom services in the United States.
- 3 L. Benzoni, P. Dutru, 'De l'accès aux infrastructures à l'accès aux moyens numériques : nouvelle frontière pour la régulation des communications électroniques', online: *espace d'inter-régulations*, ed. M A Frison Roche série Régulations, Dalloz, Paris, 2016.
- 4 The approach of regulation through competition law principles found its full expression with the 2002 'Telecoms Package'. However, competition law has been underlying any major global regulatory framework over the last 30 years. The future European regulatory framework currently consulted upon is no exception.
- 5 See, for example: N Curien, 'Innovation & Régulation 2.0', *Cahiers de l'ARCEP*, June 2014; R Feasey, C Pennings, U Stumpf, N Van Gorp Eds, *A review of SMP regulation - Options for the future*, Communications et strategies, Special Issue, N°98, 2nd Quarter 2015; International Telecommunications Union, *Trends in Telecommunication Reform. 4th Generation Regulation: Driving Digital Communications Ahead*, Genève, 2014; S Soriano, 'Barbariser la régulation pour réguler les barbares', *Huffington Post*, 5 November 2015; etc. The Communications Regulatory Authority has also engaged in a full review of its regulatory practice to align it with its mandate as per Emiri Decree 42 of 2014 encompassing access to digital media, ICT, telecom and post.
- 6 Nonetheless, digital platforms may attempt to create another 'walled garden' through standards, exclusive rights, or even offers. For instance, see in that regard Apple, Google or Facebook practices, and the concerns raised by India regarding Facebook foundation's internet access offer for free.
- 7 By activating direct or indirect externalities between end-users, digital platforms trigger snowball effects that drive up their activity: the more users of a given service, the more valuable the service, and therefore the more new users it attracts (Metcalfe's law). This dynamic of growth,

based on network externalities and snowball effects, features two major trends in markets structuration: monopolisation, and conglomeration.

The 'Winner Takes All' phenomenon underlying the development of internet services implies that the biggest company on a given market eventually becomes quasi-monopolistic. Recent experience shows that such a growth happens either organically (ie, through market dynamics leading to a quasi-monopolistic position, see – eg - the growth of Facebook) or externally (ie, through acquisitions, see – eg – the acquisition of Waze by Google already controlling part of the market through Google maps). Therefore, the absence of ex ante or ex post rules leads inevitably to the fast concentration of players into a single dominant player. The rules apply not only to social networks and search engines (see figures below), but also to e-commerce services (Amazon), communications services (VoIP with Skype, microblogging with Twitter, etc.), classified advertising services (eBay), or collaborative intermediation services (Uber, AirBnB, Booking, etc.). The internet, place of openness, initiative and free competition, generates ultimately quasi-monopolies.

Network externalities generate also conglomerates. Once a player has become a quasi-monopolist on a market, it can capitalise on its customer base to expand its range of services. The initial service is enriched progressively with new services and the player transform itself into a service platform, ie, a bundle of service more or less related to the initial service, but with specific portability functions, frequently turning such platforms into closed ecosystems (customer lock-in). For instance, a new event on Google Agenda will generate email notifications on Gmail. The event may also be shared immediately with contacts whose agenda will automatically be updated with the event. They may also display its address on Google Maps by a simple click. The platform becomes the gatekeeper of the end-user content and services.

This generates a thriving thirst for acquisitions: more than one per month by Google for nearly 15 years, one every two months for Facebook (in particular, Facebook bought WhatsApp on 19 February 2014, and Instagram on 9 April 2012 while having also developed numerous features on its social media network such as Facebook messenger). Microsoft is also present on different markets (Search engine Bing, VoIP communication services Skype, etc.). Despite some immediate and significant impact on the market, national competition authorities have always approved these M&A (re purchase of DoubleClick by Google in 2007 for \$3.1bn).

- 8 In its report on oligopolies, BEREC raises clear concerns regarding the future of regulation, underlining the growing importance of tight oligopolies, and advocates transposing into the regulatory framework the 'Significant impediment of effective competition' ('SIEC') test used for merger cases. BEREC Report on Oligopoly analysis and regulation, December 2015, BoR (15) 195.
- 9 On this point, the competition law was the precursor for its ability to apply national law to foreign companies carrying on business outside this territory. Neale and Stephens, 'International Business and national jurisdiction', 1988, ICLQ; Roth, 'Reasonable extraterritoriality: correcting the balance of interest', 1992, ICLQ. The US initiated the process, giving rise to many challenges. However, this approach was soon followed by the European Union: Case 89/85 *Ahlström c. Commission (Woodpulp I)*, 1988, ECR 5193, 4 CMLR 901.